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## SUDDEN DEATH FROM EMBOLISM.<sup>1</sup>

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DURING the past two years I have had the opportunity of observing the anatomical results of immediately fatal embolism in several instances, and under such circumstances as seem to make it desirable to call renewed attention to this cause of death, already so well recognized.

The histories of these cases show that a marked feature is the sudden and unexpected nature of the attack, whether taking place during the progress of disease or in persons apparently in good health. Combined with this is the evident impossibility of furnishing any effectual relief from the distressing symptoms, except by the administration of anæsthetics, which in most cases represent merely a change in the agent eventually employed, as the evidence of carbonic-acid poisoning very rapidly becomes manifest.

That the employment of such agents may be recommended it is desirable that a relatively correct diagnosis should be made, and although there are no symptoms pointing absolutely to embolism, there are certain suggestive ones. The comparative rarity of the occurrence in the experience of any one physician is practically likely to cause considerable doubt when the occasion finally arises, and a consideration of these symptoms becomes, therefore, all the more important.

To the kindness of the several gentlemen in whose practice the following cases occurred I am indebted for the clinical histories which give to this paper its chief value.

CASE I. The first case was under the charge of Dr. J. T. G. Nichols, of Cambridge, who reports as follows:—

“A lady, thirty-three years of age, of unusual strength and endurance, had always been well with the exception of having suffered from an attack of Panama fever twelve years ago, and from an acute laryngitis eight years previous to her last illness. She had been troubled of late by bleeding piles, which had annoyed her from time to time for several years. A mild attack of typhoid fever began October 5, 1874, though she did not take to her bed till eleven days later, when I was first sent for. She had a slight cough, which became more severe three days

<sup>1</sup> Read before the Boston Society for Medical Observation, December 18, 1876.

after my attendance began. It was paroxysmal in character, and she described her sensation as though the windpipe were constricted and she must die unless speedily relieved. During these paroxysms her face grew red, and there was severe headache. She became quite nervous in consequence. There was no alteration of the voice, nor was there any expectoration or dyspnoea. Opiates were given, and the cough disappeared on the 20th of October. During this interval there was a slight irregularity of the heart's action, of which the patient was conscious, and she could not lie easily upon the left side. Physical examination of the heart and lungs, made daily, revealed nothing abnormal. When the cough and irregular action of the heart disappeared, a sense of weakness and sinking was complained of, but there was no change in color, pulse, or temperature corresponding with this sensation, which was relieved by the moderate administration of stimulants. Five days after the first paroxysm of coughing there was a return of this symptom in a less severe form, and it was again relieved within twenty-four hours by opium. Two days later she was seen in the morning, in good spirits, and expressed her confidence as to a speedy recovery. Her pulse was 90, and the temperature 100°. She was breathing naturally, and there was nothing in her appearance to give rise to any fear of impending danger. At noon she sat up in bed to take medicine; fifteen minutes later, while being read to by her sister, she made some remark in a natural tone of voice, and immediately began to struggle. The blood rushed to her face, and the respiration became difficult. She referred her suffering to the chest and to the right iliac region. Profuse sweating came on, the skin rapidly became livid and cold, and in less than an hour she died. Just before her death she was seen by Dr. Morrill Wyman; there was then no pulse to be felt, the respiration was very imperfect, and death took place during a slight convulsion."

The autopsy was made twenty-four hours later. The right side of the heart was distended with fluid blood. A dark-red, firm, elastic thrombus was found in the main pulmonary artery, extending nearly to the valves. It was doubled upon itself, the opposed surfaces being moderately agglutinated, and formed a mass nearly as large round as the thumb. The angle thus formed pointed towards the heart, and this portion of the thrombus presented a conical shape. It extended into the main pulmonary arteries of both lungs as far as the tertiary divisions. The oldest portion was in one of the tertiary divisions of the right pulmonary artery, the age being indicated by a firmer adherence to the wall, a softer consistence, and a reddish-gray color. There was no evidence of local disease of the pulmonary artery, and the surrounding tissue was not essentially altered.

The lower lobes of both lungs were extensively injected, and the right upper lobe was oedematous. There was no haemorrhagic infarction.

The kidneys and liver were injected; the cystic duct was obstructed by a gall-stone, and there was cystic dropsy of the gall-bladder in consequence. The spleen was acutely enlarged, and Peyer's patches, near the ileo-caecal valve, were moderately swollen, opaque, oedematous, and of a bluish slate color. There were three small typhoidal ulcers in the caecum in the process of healing. A source for the embolism of the pulmonary artery was not ascertained, circumstances preventing a prolonged search.

The cause of death in this case seems to have been a primary embolism of a small branch of the pulmonary artery, and its extension towards the heart by secondary coagulation, until it actually protruded into the main pulmonary artery. The protruded part was then bent backwards, doubled upon itself, and was continued into the pulmonary artery of the other lung. It has long been evident that in typhoid fever there are certain predisposing elements to thrombus-formation. The enfeebled action of the heart, the confinement in bed, and the muscular rest act as favoring causes in producing the marantic thrombus, usually in the veins of the extremities or in the vesical plexus. The existence of haemorrhoids naturally calls attention to the latter region as affording an additional factor in the production of thrombi, but none were found in these veins.

As the febrile attack was a mild one, during the first eleven days not necessitating confinement in bed, there seemed to be nothing in the general condition of the patient to call attention to the possible presence of a thrombus. In the light of the result, however, there are certain symptoms which seem of considerable importance, and Dr. Nichols has called very direct attention to them. These are the paroxysmal cough, the sensation of constriction and feeling of anxiety, without alteration of voice or dyspnoea, associated with temporary irregular action of the heart. Some days after the disappearance of this attack another similar one, though less severe, occurred, which was more speedily relieved. The absence of physical signs in the chest, and of special symptoms calling attention to the larynx, is of importance in withdrawing attention from the hypostatic pneumonia and laryngeal ulcerations which form so frequent a complication of typhoid fever.

The anatomical evidence of an antecedent embolus was quite sufficient, and if these paroxysmal attacks can be regarded as resulting from the transfer of emboli, it becomes evident that an original autochthonal thrombus must have been formed before the close of the second week of the fever, at a time when the patient had been in bed but three days.

**CASE II.** The following case was reported by Dr. E. Chenery at a meeting of the Suffolk District Medical Society.<sup>1</sup>

<sup>1</sup> *Vide JOURNAL, 1876, xciv. 396.*

A lady, fifty-two years of age, was first seen by Dr. Chenery on August 26, 1875. She was in robust health till a short time before, when she had occasional attacks of diarrhoea. She had become weak and anaemic, complained of pain in the back and pelvis, and was constipated, though troubled with frequent mucous discharges from the rectum. During the following month she became steadily worse. On September 27th she was suddenly seized with dyspnoea, and became cold and clammy; the pulse was rapid and weak. In the course of two hours she rallied, but soon relapsed and died.

The autopsy showed that the immediate cause of death was a thrombus of the primary pulmonary artery extending into the secondary divisions; the thrombus was firm, gray, and laminated. Its source was not discovered. There was also cancer of the right ovary, filling the pelvis.

This patient, though previously robust, had become rapidly cachectic, apparently in consequence of the progressive cancerous affection and the frequent intestinal discharges. There seem to have been no symptoms from which an existing thrombus could be suspected, and no evidence of embolism preceding the fatal attack.

**CASE III.** Dr. R. L. Hodgdon, of Arlington, presented to the Obstetrical Society of Boston the account of the following case, which occurred in his practice.<sup>1</sup>

The patient, twenty-five years of age, had already borne one child. The labor was a tedious one, and it was necessary to apply forceps. Before and after this event her health had been good. At her second confinement, January 22, 1875, a healthy female child was delivered by turning, there being but little loss of blood. During the subsequent twenty-four hours the after-pains were severe. A few hours after delivery she had a chill and pain in the left iliac region. Pain and tenderness in this region, accompanied by general febrile excitement, persisted for several days, when the symptoms subsided, and an apparently favorable convalescence followed. There was no œdema of the legs observed, nor was there any cough. On the twenty-fourth day after delivery the patient went to the bed from her chair, remarking, "I never felt better in my life." She lay down, and at once began to breathe with great difficulty. Dr. Hodgdon saw her ten minutes later; she was tossing about on the bed, suffering intensely, and complaining of pain in the epigastric region. The face was livid, the tongue blue, and the respiration labored, 80 per minute. The pulse was rapid, small, and thread-like, and but one sound of the heart was heard. The chest was resonant, and air could be heard entering it. Her condition remained the same during the following ten or fifteen minutes, when death took place.

The body was well nourished, but the organs were generally anaemic.

<sup>1</sup> Vide JOURNAL, 1875, xciii. 73.

A soft, reddish-gray thrombus, of the size of the forefinger, extended from the right iliac vein into the inferior vena cava for two inches. Thrombi were also found in the right ovarian vein and in the vesical plexus. The uterus was in a state of normal retrogression. The tricuspid orifice contained a club-shaped embolus one and a half inches in length, the larger end being the size of the tip of the forefinger. Both primary pulmonary arteries were plugged with emboli; also their branches which passed to the upper lobes of both lungs. These lobes were œdematos, while the lower ones were injected.

Although in this case there was clinical evidence of a pathological process in the pelvis, yet there were no special symptoms to call attention to its exact nature, nor was any evidence found after death to explain such symptoms. Certainly, during the last two weeks of the patient's life the case differed in no respect from perfectly normal cases of convalescence after labor. Whatever may have been the cause of these symptoms, a thrombosis could least be suspected, though it may have been a result. From the well-known fact that extensive thrombosis may take place without symptoms, and from the absence of the most common and prominent symptom of puerperal thrombosis, milk-leg, there seems to have been but little to suggest even the idea of embolism.

**CASE IV.** A man fifty years of age entered the Massachusetts General Hospital January 5, 1876, to be treated by Dr. Cabot for an ulcer of the leg. Many years previous he had been injured by a boat-hook, but the wound had never healed; at one time it even extended from just below the knee to the ankle, though at the time of his entrance it was about the breadth of two fingers only. For the two weeks preceding his admission he had been annoyed by considerable dyspnoea and by a slight cough, though there had been but little expectoration. He had also complained for some time of a fluttering sensation in the region of the heart. He was very weak; the face was pale and the lips blue, and he had an attack of faintness while being carried to the ward. The pulse was fair, though rather quick; the heart's action tumultuous, and the impulse felt over an abnormally large area, but no souffle could be detected. Examination of the lungs disclosed nothing but a few moist râles at the base. The urine had a specific gravity of 1013, and contained one half per cent. of albumen. Granular and hyaline casts, blood, pus, and oxalate of lime crystals were seen with the microscope.

At the morning visit, two days after his admission, he said he was feeling better, but about 4.30 P. M. he suddenly became oppressed in breathing, with paroxysms of unconsciousness; the face became livid, the pulse failed rapidly, and in about a quarter of an hour he died suddenly in one of the attacks of unconsciousness.

At the autopsy, seventeen hours after death, the left foot was found to be oedematous. The brain was examined, but nothing abnormal was found beyond an increased density of the posterior lobes. In each pleural cavity was about a pint of clear yellow fluid, and there were about four ounces in the pericardium. The heart was considerably enlarged from dilatation and hypertrophy. The aortic orifice permitted slight regurgitation, the valves being thickened and slightly retracted. The mitral orifice was enlarged, and the line of apposition of the valves was slightly roughened. The cavities of the heart contained post-mortem clots, and the right side was dilated, the left contracted.

The right and left pulmonary arteries were filled completely with firm red thrombi extending into the tertiary branches. On the left side they were moderately adherent to the walls, while on the right they were connected with an adherent, partially decolorized, and somewhat softened embolus. At the periphery of the right upper lobe were two wedge-shaped nodules of infarction of a reddish-gray color, about an inch and a half broad at the base.

Six ounces of fluid were found in the abdominal cavity. Both liver and kidneys presented the appearances of chronic passive congestion, nutmeg atrophy in the former, cyanotic induration in the latter; degenerative changes had also taken place in the renal epithelium.

The left femoral vein contained a recent thrombus extending from below the middle of the thigh into the iliac vein. From Poupart's ligament downwards it almost completely filled the vein, while above this point it represented a continued partial thrombus.

The various conditions favoring the production of a marantic thrombus were present here to a marked degree, as well as a local predisposing cause for the origin of the thrombus. The dyspnoea and cough which existed previous to the patient's entrance into the hospital are of but little value in relation to embolism, on account of the evident disturbance to the pulmonary circulation from the chronic valvular disease of the heart.

Although the attack of faintness may have been connected with the transfer of an embolus, it is evident anatomically that several transfers had taken place, from the nodules of infarction in one lung and the adherent embolus in the other.

However numerous may have been the emboli which preceded the fatal attack, a distinct interval of several days existed between the occurrence of any symptoms pointing to serious disturbance of the circulation and those immediately preceding death.

CASE V. On or about the 1st of May, 1876, I received from Dr. I. G. Porter, of New London, Ct., the thoracic organs of a patient who had died suddenly. From the published account of the case<sup>1</sup> it

<sup>1</sup> American Journal of the Medical Sciences, 1876, cxliv. page 436.

appears that the patient, sixty-one years of age, was of robust and plethoric appearance, and of extremely active habits. His pulse was always small and weak. For two weeks previous to his death he complained of unusual weakness, and had a slight bronchial cough. He was able to attend to his business, however, and drove out the day before his death, managing the horses himself. After a restless night he arose, took a bath as usual, and went to the observatory at the top of the house as was his custom. "But he returned almost immediately, became faint and breathless, and barely reached the lower floor, when he almost fell into the arms of his family. I reached him very soon (at 7.45 a. m.), and found him cold and in profuse perspiration; countenance pale and ghastly; pulse rapid, irregular, and scarcely perceptible. He was very restless, though without true pain, and complained earnestly of being faint and of having no breath, although at the time filling his lungs completely at every inspiration. The difficulty was not increased by the horizontal position, and yet he preferred to sit up, supported by friends. Stimulants conferred momentary relief, and simplicis and external warmth were freely used, but in about half an hour his head fell on his breast, and he was gone, remaining conscious to the last."

The organs arrived in a fresh condition; the heart had been opened, but had contained fluid blood, according to the accompanying letter. There was moderate dilatation with hypertrophy due to chronic changes at the aortic orifice, also thickening and contraction of the valves, which produced insufficiency. One of the aortic valves was almost wholly obliterated. The heart was not in a state of fatty degeneration.

In one of the secondary branches of the pulmonary artery of the left lung, an adherent and slightly decolorized thrombus was found, which had probably been in position several days. A more recent but still ante-mortem coagulation extended from this towards the main pulmonary artery of both lungs, and was continued into the right pulmonary artery, filling its primary branches. An arborescent thrombus was thus formed, with its ends rounded and pointed and passing from an inch to an inch and a half into the primary branches. Beyond its ends in the lung the blood was still fluid. No source of embolism was found in the heart.

In the report of the case referred to, Dr. Porter states that "some eighteen months previous to his death the patient made an overland journey to California, and, as he thought, through long and persistent confinement in the cars, his left leg and foot became very painful and swollen; so much so that for some time after his arrival he was disabled for business, and was under the care of a surgeon, and by him kept very quiet in a horizontal position. The pain left him after a while, but the limb remained swollen quite to the time of his death,

though it did not particularly incommod him in walking." About a fortnight before the patient's death he strained violently at the health-lift, after which he complained of feeling ill. Dr. Porter suggested that at this time, through powerful muscular action, a fragment may have been detached from a possible thrombus then existing.

**CASE VI.** A man fifty-five years of age, of marked cachectic appearance, entered the Massachusetts General Hospital to be treated by Dr. J. C. Warren for caries of the wrist, of two years' standing. During this period he had been unable to work on account of the local trouble. When he arrived at the hospital the wrist was much swollen, and a mild attack of erysipelas came on, which had almost subsided at the time of the fatal attack. Early in the morning of October 3, 1876, eight days after his entrance, a patient in an adjoining bed called the nurse's attention to him on account of apparent difficulty in breathing and the expression of his face. He had become unconscious almost instantly. Fifteen minutes later he was pulseless and breathless. There was no lividity, nor had any spasm or convulsion taken place. He had been in bed during his stay in the hospital, and the night before had expressed himself as feeling very much better than when he entered.

At the autopsy, made thirty-two hours after death, the heart was found distended and contained mainly fluid blood. A thrombus nearly two inches in length and as large round as the little finger extended from the right ventricle into the pulmonary artery. It was dark red and moderately firm, evidently having formed some hours before death. Several thrombi which had apparently been contained in the small pulmonary vessels were removed from the thorax. The entire lower lobe of the left lung was in a state of atelectasis, of relatively recent origin, and the right lung was edematous. The kidneys and liver were unusually injected.

A source of embolism was looked for but was not found.

Whether the decided swelling of the wrist, evident at the patient's entrance into the hospital, resulted from a thrombosis or not, was not ascertained. A minute dissection of the veins of the arm was not made, although those were opened which were large enough to contain an embolus of the size mentioned.

A marked peculiarity in the symptoms of this case is furnished by the absence of lividity and spasms. The record of the symptoms immediately preceding death is a very brief one, the negative facts having been obtained several days after the death of the patient. The appearance of the organs suggested that death was the result of suffocation, but the recorded symptoms do not point in the same direction.

Although the element of enfeeblement is common to all of these cases, the degree is so varied that its importance as a general feature becomes comparatively limited. In the puerperal and typhoid cases it

was by no means sufficient to cause any anxiety; both were regarded as convalescing favorably, and the condition of the organs indicated that such was the case. The mere fact that under these circumstances an accident of so grave a character may take place is sufficiently suggestive of a guarded prognosis even when a rapid recovery is anticipated. In Dr. Porter's case the theory of the cause and effect is certainly a very plausible one. Although the patient was far from being looked upon as enfeebled, yet the occurrence of a probable thrombo-phlebitis, in connection with confinement, indicates that a relatively trivial factor was alone required to bring about a diseased condition. After such an attack his health could hardly be regarded as fully up to the average. Of great energy and engaged in active commercial pursuits, his tendency was to add to rather than to withdraw from the routine of his daily life.

The symptoms of cardiac disturbance were insufficient to attract special attention to the heart; nevertheless, some time after his return from California, he made a summer trip to Europe on account of overwork.

In the three other cases the cachectic condition was strikingly apparent, of extremely rapid origin in the cancerous patient, and of more protracted character in the cases of chronic ulcer and caries.

It may be considered that in all the cases, except perhaps in Dr. Porter's, there were no symptoms by which an existing thrombus could be directly diagnosticated. There are certain points, however, in the histories of some of them which seem to be of value in calling attention indirectly to such a condition. These are such as may be attributed to antecedent embolism.

In Dr. Nichols's case embolism of a tertiary branch of the right pulmonary artery, without resulting infarction, had occurred. In Dr. Cabot's case there was an embolism of a tertiary branch of the right pulmonary artery, also without infarction, in addition to the two nodules of haemorrhagic infarction seated near the periphery of the right upper lobe. In Dr. Porter's case an embolus of a secondary branch of the left pulmonary artery had previously taken place. In three of the cases, therefore, there is anatomical evidence of antecedent embolism, while in the other three cases the only embolism was that immediately proving fatal.

It is to be noticed at the outset that the anatomical results of the embolism in these three cases were not alike. In one case only were nodules of infarction, embolic pneumonia, present, while in the other two cases no such condition was apparent. This discrepancy in the results of pulmonary embolism is one not unfrequently observed, and has recently been made the subject of experimental study by Cohnheim and Litten.<sup>1</sup> According to these observers an abnormal sluggish-

<sup>1</sup> *Virchow's Archiv*, 1875, lxxv. 99.

ness of the capillary current or an increased resistance to the escape of blood from the pulmonary veins must be present that infarction may occur. The former takes place in connection with multiple embolism of the lungs and from diminished action of the right side of the heart, as in protracted fevers and fatty degeneration. The latter is produced by valvular disease in the left side of the heart. Although the valvular disturbance found in Dr. Cabot's patient was incompetency rather than obstruction, yet the evidences of chronic passive congestion found in the liver and kidneys indicated obstruction to the passage of blood through the lungs, which obstruction had no evident source in these organs.

The question of practical importance is, were there any symptoms in these cases from which embolism could be inferred? Jürgensen<sup>1</sup> states that the obstruction of a small branch of the pulmonary artery usually gives rise to no symptom and that it is undetermined how large an infarction must be to give rise to symptoms. These are an increased frequency of respiration, even actual dyspnoea, little or no fever at the outset, although it may appear later, and a chill which is about as often absent as present. Cough arises, followed sooner or later by bloody expectoration in small quantities, and lasting several days; then there is pain when the infarction is seated at the periphery of the lung. The results of a physical examination of the lungs are dependent upon the size and seat of the embolus. He further adds: "Although it is very easy to describe these signs theoretically, it is very difficult to make them out practically." Gerhardt,<sup>2</sup> in addition, calls attention to sudden fainting attacks when a considerable portion of the pulmonary circulation is obstructed, and further to convulsive or spasmodic movements and disturbed cerebral function, all of which symptoms are attributed to anæmia of the nervous centres.

In neither of these three cases is bloody expectoration recorded, nor is there mention of a chill or of fever to be attributed to embolism. Dyspnoea is prominent though its character is not always fully described.

In two of the cases cough was observed, coming on suddenly in one case, in the other regarded as due to influenza although perhaps of equally sudden origin. In Dr. Cabot's case the sudden fainting attack may have been the symptom of embolism, though the dyspnoea and cough for two weeks previous are more likely to have resulted from the heart disease. In one of the cases a feeling of anxiety, in the other of uneasiness, is described as coming on suddenly. Temporary irregularity of the heart's action is noted in the case where the heart was healthy.

The special feature of importance seems to be the *sudden* occurrence

<sup>1</sup> Ziemssen's Handbuch, v. 251.

<sup>2</sup> Sammlung klinischer Vorträge, xci. 726.

of symptoms pointing to the lungs and brain. If these are associated with ascertained chronic disease of the heart, or with evidence of an existing thrombus, their value becomes considerable in exciting suspicion. This suspicion receives confirmation and becomes strengthened into probability as the other symptoms previously enumerated make themselves apparent.

The importance of ascertaining the existence of a pulmonary embolism is all the more apparent as the mechanical production of death in these cases is considered. Although in four cases the embolus may be regarded as sufficiently large to produce direct, rapid suffocation, in two cases this result was arrived at indirectly by the growth towards the heart of the thrombus which formed upon the antecedent embolus. The end projecting into the main pulmonary artery was bent backwards and forced into the unobstructed artery. Even in one of the four cases this combination of continued thrombosis, by cutting off the blood supply to one lung, was of great importance in necessitating sudden death when the pulmonary artery of the other lung received its obstructing embolus. A new element of danger thus becomes associated with the continued thrombus, that of giving rise to immediate and fatal obstruction without detachment, as well as through embolism.

The symptoms of the immediately fatal attack may be grouped together as follows: sudden extreme dyspnoea with open tubes, cough and thoracic pain, lividity or pallor, rapidly failing pulse, cold sweats, intense anxiety, and attacks of fainting or unconsciousness with or without spasms.

These symptoms may be referred to the lungs, heart, and nervous system, and are evidently due to the instantaneous elimination of more or less of the pulmonary circulation. The immediate effect of this is twofold, an accumulation of blood in the right side of the heart and nervous system in general, and a diminution of blood in the left side of the heart and arterial system, from the cutting off of the supply through the lungs. This arterial blood is not only diminished in quantity but in quality also, being poor in oxygen and containing more carbonic acid owing to the obstruction in the pulmonary vessels; and for the same cause the venous blood throughout the body contains an excess of carbonic acid. These changes in the composition of the blood are spoken of as suffocation, and it is of this condition that the patients so earnestly complain. Despite the respiratory efforts the blood becomes insufficiently aerated, and the fainting and spasms result from the causes producing the dyspnoea. The heart's action becomes enfeebled and irregular from dilatation of the right side and from diminished and insufficient blood supply to its walls, as well as from eventual paralysis of the pneumogastric nerves, and death is thus likely to result from asphyxia.

It is to be observed that in two of the cases death occurred with great rapidity, in fifteen minutes even. In one the pulmonary valves were apparently prevented from closing, and the face was not livid; in the other it seems probable that one pulmonary artery having been previously obliterated, the other became almost instantaneously closed. The immediate result must have been the same, non-oxygenation, and according to Pflüger<sup>1</sup> an insufficiency of oxygen kills much more rapidly than the immense accumulation of carbonic acid.

In the other cases where the symptoms of the fatal attack lasted from a half hour to two hours, sufficient opportunity seems to have been allowed for both factors to take effect, — the diminution of oxygen and the accumulation of carbonic acid.

In conclusion it may be stated that in general the symptoms of suffocation are considered as resulting from the prevention of the entrance of air into the lungs, from an obstruction to the pulmonary circulation, and from the removal of oxygen from the blood. In the differential diagnosis, in so far as it concerns the subject of this paper, it becomes therefore of importance to eliminate from the first two series the productive causes and to combine such elements as may add positively to the diagnosis.

The suddenness of the conditions being their chief interest here, all those forms requiring time for their production may be disregarded, and there remain —

(1.) Closure of the greater air passages or of a large number of small ones, from without or from within. (2.) Nervous lesions, particularly intracranial, affecting respiration and circulation. (3.) Obstruction to the pulmonary circulation from emboli, of blood and air particularly, fat being more gradual in its effects.

The first series may be eliminated by the physical and rational evidence of open air passages.

When an intracranial origin of suffocation exists, the predominant early symptoms are those of cerebral anaemia, namely, pallor, relaxed muscles, disturbed hearing and vision, contracted pupils, fainting, and convulsions. Although dyspnoea may at times precede these symptoms, it is not usually of so severe a character as in the other series.

In favor of the embolic source of the disturbance is the history of an antecedent thrombus or of a disease of the heart likely to be associated with thrombosis. The primary brief disturbance of cerebral function is rapidly, at times almost instantaneously, followed by extreme dyspnoea (Gerhardt<sup>2</sup>) while later the symptoms of cerebral anaemia again become prominent.

Briefly, if in suffocation the symptoms of cerebral anaemia predomi-

<sup>1</sup> Wagner's General Pathology, 563.

<sup>2</sup> Loc. cit.

nate, the source should be sought for in internal haemorrhage or in intracranial disturbance ; if the thoracic symptoms are most prominent, the air passages or the circulatory apparatus are to be questioned, and the former can most readily be excluded. The only positive evidence in favor of the latter is to be derived from the previous history of the patient.

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### A MODIFICATION OF THE OPHTHALMOSCOPE.<sup>1</sup>

BY O. F. WADSWORTH, M. D.

DURING the last few years the direct method of ophthalmoscopic examination (upright image) has come more and more into favor. While it enables the inspection of the background of the eye under a much greater magnifying power than by the indirect method, and is free from the disturbing reflections from the surfaces of the auxiliary lens which attend the latter, it also permits the tolerably close determination of the refraction of the observed eye independently of the subjective impressions of the patient. For the patient the direct method has the important advantage that a far less amount of light need be thrown into his eye, and the often disagreeable dazzling caused by the indirect method is thus avoided.

To the generalization of this method the modification of Loring, which consisted in placing a rotating disk containing lenses of different focal power behind the mirror, has chiefly contributed. In his ophthalmoscope, as in nearly all the various modifications of it which have since appeared, the mirror stands in a plane parallel to that of the disk behind it. To this there is an objection. With such an arrangement, in order to throw the light from the lamp into the observed eye, the mirror, and also the correcting lens behind it, must be placed at an angle to the direction in which the observer looks and which the rays coming from the fundus of the patient's eye to enter his follow. The effect of this oblique position of the lens on the rays which traverse it is as if there were added to it a cylindrical lens, its axis corresponding to the axis on which the spherical lens is inclined. The lens is made practically astigmatic, and the image of the fundus seen through it is distorted as it would be if the observed eye were astigmatic. The degree of astigmatism increases with the increase of obliquity of the lens, and for a given degree of obliquity is proportionate to the strength of the lens. When the mirror is placed in suitable proximity to the observed eye, an inclination of 20° is as little as can well be given to it in order to reflect the light into the eye in such a way that the fundus may be seen. For the lower degrees of ametropia the amount of astigmatism caused

<sup>1</sup> Read before the Boston Society of Medical Sciences, December 26, 1876.

by such an inclination of the correcting lens is so small that it may in practice be neglected. But when a lens of high power is needed behind the mirror, that is, with a high degree of ametropia of the observed or observing eye, or of both combined, the astigmatism becomes very considerable (with a lens of  $\frac{1}{2}$  amounting to as much as  $\frac{1}{4}$ ), and no accurate determination of the refraction can be made. Nor can a distinct image of the fundus of an eye with a high degree of ametropia be thus obtained. This latter fact is generally recognized, though the cause is not so generally known.

There are, however, ophthalmoscopes with the mirror inclined to the plane in which the correcting lenses lie, Jaeger's being the most familiar, and to these the above objection does not apply. But in all these, so far as I have been able to obtain knowledge of them, the mirror is so placed that its central opening is at a very considerable distance in front of the correcting lens, and this entails the disadvantage that it contracts the field of view of the observer, and in case the observed eye be hypermetropic it diminishes the amount of light received by him.

The modification which

I wish to describe is designed to correct both the defects mentioned. A concave mirror of seven inches focus and fifteen mm. in diameter, is set at an angle of  $20^\circ$  in the centre of a thin plate which takes the place of the ordinary mirror in a Loring's ophthalmoscope. By thus diminishing the size of the mirror it has been possible to set it so far back that the hole in its centre, 4 mm. in diameter, is at its farthest edge only 4 mm. from the anterior surface of the correcting lens behind it. The plate with the mirror rotates, so that the



latter may be turned toward the right or left and the instrument be used for either eye. The small size of the mirror offers no impediment to examination by the direct method, since by this method, on account of the nearness of the mirror to the observed eye, only the light reflected from the parts of the mirror immediately about the central perforation can enter the pupil. The small mirror does not, however, give light enough for the indirect method, and it is therefore arranged so that it may be readily detached and a full-sized mirror substituted. But where the ophthalmoscope is in frequent use it will be found more convenient to have a second ophthalmoscope, to be used for the reversed image only, with which a movable clip containing a 10" or 12" convex lens behind the mirror would be sufficient. The large size of the opening in the mirror, 4 mm., offers an advantage in determining errors of refraction, provided the pupil be large, since where the refraction is im-

perfectly corrected it allows the formation of larger circles of dispersion on the retina of the observer, and hence the imperfection of the correction may be more easily recognized. The instrument to which I have had this mirror fitted is one of the earlier pattern of Loring, with three removable disks. The lenses in the later patterns of Loring and in most other "refraction" ophthalmoscopes are too small to admit the use of so large a hole in the mirror with advantage, and with these a smaller hole may be used.

The mirror may be obtained of Mr. H. W. Hunter, optician, 1132 Broadway, New York.

## RECENT PROGRESS IN PHYSIOLOGY.<sup>1</sup>

BY HENRY P. BOWDITCH, M. D.

### PERCEPTION OF TONES AND NOISES.

EXNER<sup>2</sup> discusses the question whether we cannot suppose that the organ of Corti serves for the perception of noises as well as of musical tones instead of assuming with Helmholtz<sup>3</sup> that its use is limited to the latter purpose only, and that noises (that is, a single sonorous impulse or an *irregular* series of them) are heard by means of the nerve terminations in the vestibular sac and in the ampullæ. The question derives additional interest from the fact that the semicircular canals and the ampullæ are now almost universally regarded as organs serving to the maintenance of equilibrium. Even to the utriculus a function of this sort has been assigned, leaving only the *sacculus hemisphericus* for the perception of noises, unless it can be supposed that the same organ may serve for two such totally different functions as hearing and the preservation of equilibrium. Exner first endeavors to determine whether there is any good reason to suppose that noises may not be perceived by the organ of Corti. To produce a single sonorous vibration he makes use of the snap of an electric spark which has been shown by Töpler<sup>4</sup> to give rise to only one sound-wave. Now it is found that two electric sparks following each other at an interval of only 0.002" are recognized by the ear as not absolutely synchronous. If this brief interval is recognized by means of Corti's organ we must suppose that certain fibres are set in vibration by the first sound-wave and that before the second wave reaches them, that is, in 0.002", time enough has elapsed for the amplitude of the vibration to become *perceptibly* diminished. Now, it has been shown by Helmholtz that the fibres in the cochlea are so constituted that when left to themselves after being set

<sup>1</sup> Concluded from page 76.

<sup>2</sup> Pflüger's Archiv, xiii. 228, and Centralblatt, 1876, 756.

<sup>3</sup> Tonempfindungen, iii. Aufl. page 226.

<sup>4</sup> Beobachtungen nach einer neuen optischen Methode. Bonn. 1864.

in vibration, the intensity of their movement is after about 9.5 vibrations only one tenth of the original amount. The most rapidly vibrating fibres of Corti's organ would in 0.002" have time to execute 7.9 vibrations. It is thus evident that in the interval between the two electric sparks the vibrations of these fibres would diminish very perceptibly, and the recognition of this interval by means of the organ of Corti does not therefore seem impossible.

There are, however, various considerations which stand in the way of this conclusion. In the first place the fibres of Corti are supposed to be set in motion only by a rhythmical *series* of sonorous impulses corresponding to their period of vibration, and in this way to give rise to the perception of musical tones. The fact that we can perceive a pure tone without any mixture of noises seems to show that a single sound-wave is incapable of affecting the fibres of Corti, for were it otherwise every tone which strikes the ear would set in motion not only the fibres having corresponding periods of vibration, but many or all of the other fibres, and the tone would always be accompanied by noises.

Exner investigates this subject experimentally, and finds that for the perception of a tone it is necessary that about sixteen or seventeen vibrations fall upon the ear, and he thus confirms the objection to the hypothesis that the organ of Corti can be acted upon by single sonorous impulse.

It may be said in reply to this objection that the single sound-wave produced by the electric spark has perhaps so great an amplitude that it carries the fibres of Corti as far out of their position of equilibrium as the sixteen sound-waves of a musical tone. Exner subjects this hypothesis also to experimental investigation by means of a vibrating flame. A fresh preparation of the middle ear is so arranged that gas can be conducted through it to a burner and the vibrations of the *membrana tympani* are thus rendered visible by the movements of the flame. By this method it is found that, while a musical tone sounded in front of the external meatus produces distinct movements of the flame, the snapping of the electrical spark has no effect whatever.

Thus far the evidence is decidedly in favor of the view that the fibres of Corti can be affected only by a rhythmical *series* of sound-waves, but Exner's next observation is difficult to explain on this theory. He listens to the noise of successive pairs of electric sparks in which the interval between the single sparks is variable but always very small, and finds that the shorter the interval between the separate sparks the *higher* the pitch of the noise produced by the pair of sparks, though nothing like a musical tone is heard. In view of this observation we are forced to assume either that there is in the ear a noise-perceiving apparatus which at the same time can distinguish pitch, or else that the noise produced by electric sparks can, in spite of the above-

mentioned evidence to the contrary, be perceived by the fibres of the cochlea.

Exner adopts the latter hypothesis and, by somewhat extending the theory of Helmholtz as to the functions of the organ of Corti, accounts for the observed phenomena. According to Exner the degree of stimulation of a nerve fibre depends not merely upon the *extent* to which the corresponding fibre of Corti is carried out of its position of equilibrium, but also upon the *rapidity* with which the fibre executes the movement. The sound-wave of the electrical spark is, in comparison with the wave of a musical tone, so short that it may be said to drive or tear rather than to draw the fibres of Corti from their position of equilibrium. A fibre of the auditory nerve, therefore, may not be stimulated when the corresponding fibre of Corti is *drawn* to a certain distance from its position of equilibrium, but it is stimulated when the same fibre is suddenly *driven* to the same point. The author's arguments in favor of this hypothesis cannot be well given without a reference to the figures which illustrate the original text and which represent the vibrations of elastic rods under a variety of conditions. It is interesting to notice, as a fact tending to confirm this theory, that all very high and loud tones lose their musical character, and give the impression of shrill noises.

The author concludes as follows: "While the perception of a tone is occasioned by the relatively slow vibration of a small number of fibres, a noise is perceived when all the fibres of the membrana basilaris are driven with comparatively great rapidity from their position."

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#### PROCEEDINGS OF THE BOSTON SOCIETY FOR MEDICAL OBSERVATION.

O. W. DOE, M. D., SECRETARY.

NOVEMBER 6, 1876. *Hip Disease.* — Dr. DWIGHT read the following paper on hip disease: —

A case of hip disease which in some respects may be thought curious will serve as a text for my remarks.

The patient, twelve and a half years old, is of very healthy family in good circumstances. In May, 1875, he was knocked down by a horse and buggy, and there was some question whether the wheel did not pass over his leg, but the very slight inconvenience he experienced leads me to think it did not. Before that he had used the velocipede of the three-wheel pattern worked by the feet, and had experienced an ill-defined inconvenience from its use.

During the last winter he had played and skated as usual, but it was noticed that he walked awkwardly, and that in lacing his boots he put the left leg, as was natural, across the right knee, but that for the right foot he stood up, put-

ting it on a chair. He also fell frequently. He complained of no pain, and indeed appears to have felt little or none, and had not suffered in health.

He was taken to the family physician, a distinguished surgeon, on or about the 10th of June, for clumsiness in walking. The diagnosis of hip disease was made, but there was very little deformity. The right leg appeared a little longer than the other, and the buttock was slightly flattened and broadened. The movements were nearly normal, but rotation outward was limited. To show that he had no tenderness in the hip the boy got on to a sofa and jumped down, alighting squarely and firmly on both feet without flinching.

June 13th, a short Sayre's splint was applied till a Davis's splint could be procured, and tincture of iodine was painted about the joint. As the family left town for the summer the patient was put under my care.

June 15th. The condition was considerably changed for the worse. The splint being loosened, tapping or pressure on the sole produced no pain, but a moderate tap on the great trochanter did, the pain being referred mostly to the front of the thigh. There was no eversion of the foot, but the patient could not bear any weight upon it, not even enough to stand squarely. He complained of no pain except once or twice in consequence of jars which the splint did not break. He walked with the assistance of a cane, sometimes with two.

June 18th. One of the straps having slipped, it was necessary to reapply the splint, which had to be done with great care, keeping the leg firmly extended whenever it was moved, as any jar gave great pain. But very limited movements could be made without causing pain.

July 4th. The acute symptoms had gradually diminished, but there was still much irritability in the joint. The splint seeming to give but little support, the Davis's splint previously ordered was substituted. The thigh had a slight tendency to flexion, but there was pain at any attempt to bend it still more on the body. The new splint was found to give far better support and, having crutches, the patient moved very freely, bearing, however, exceedingly little weight on the splint.

On July 10th the splint broke, through a defect in the fastenings, and was taken off to be repaired, the Sayre's splint being substituted. On July 18th the Davis's splint was reapplied, and it was quite evident that it was far superior to the short one. The knee, it should be mentioned, was left unconfined.

During the acute attack in the last half of June and early part of July, the patient had experienced some loss of appetite and of flesh, but from about this time he improved steadily. Some time later, in the hope of getting him to walk more on the splint, for he was inclined to swing the leg altogether as he walked on his crutches, I confined it to the splint by padded bandages, one above and one below the knee, without any great improvement.

On September 2d, for the same purpose, I put on a ham splint, which seemed to give much support and to be an agreeable change to the patient.

September 7th. On examination I found irritability nearly gone. It had always given pain to evert the foot when the patient was lying down, but it could be done more freely than ever before. The thigh also could be flexed to a right angle with the body. It is to be noticed that before flexion was carried to the point of causing pain, this could be immediately produced by rotating the thigh outward. No special care was necessary in moving the limb.

September 14th. The thigh could be flexed to decidedly less than a right angle.

September 30th. Eversion of the foot, that is, rotation outward of the thigh when the limb was straight, caused no pain. It could be flexed so as to nearly reach the body, and then no pain was felt except on rotation, and indeed not till this had reached almost the normal degree. The patient could stand nearly straight, bearing a good deal of weight on the right leg when the splint was off, and he took one or two steps without it, though in a clumsy and timid manner. When the splint was on he occasionally walked short distances without crutches. The patient was then returned to the care of the surgeon of the family.

The case presents some points that induce me to touch on the hackneyed question of the *aetiology* of hip disease. The following points may be looked on as settled: first, that the disease occurs most frequently in the strumous; secondly, that it very frequently is of traumatic origin, — statements that are perfectly reconcilable. Authorities differ when we go beyond this. Dr. Gross denies that it is possible for coxalgia to occur in a child whose constitution is not below par, and states that the usual answer to the question as to whether the child has received a fall or an injury is "no." Sayre, as is well known, is an extremist on the other side, maintaining that the disease is almost always traumatic. In his recent work he gives the following statistics. Out of three hundred and sixty-five cases a traumatic cause was assigned by the patient or parent in two hundred and fifty-seven. In two hundred and seventy-eight the previous general condition of the patient was good, in forty-two bad, and in forty-five unknown. Though somewhat inclined to Sayre's view of the matter rather than Gross's, I cannot admit the validity of these figures. It is very common to hear the parent refer the disease to a fall, which fall was really due to already existing disease, though naturally it had not then been recognized. One of the most marked symptoms of the trouble, as no one can know better than Dr. Sayre, is this tendency to fall without apparent adequate cause, and consequently the perfectly honest statements of even intelligent parents are of little real value in this question. On the other hand it is not to be overlooked that, though the fall which was considered the cause is a result, yet the disease may be really due to some preceding fall or injury which occasioned no immediate symptoms of consequence, and was entirely forgotten. Again, it seems to me that the disease may be subdivided into two main classes as regards its origin: in the first it arises within the joint, in the second in the bone. It is, I think, probable that the latter mode of origin is most frequent in evidently scrofulous patients, and I believe that there is no reason to doubt, or certainly none to deny, that a traumatic synovitis of the hip-joint may occur in a healthy child. This is, in my opinion, what occurred in the case I have reported.

The next question is why it occurred, and in what manner. There can be no doubt from the various symptoms detailed that there was trouble in the joint long before advice was taken and the diagnosis made. An anomalous symptom, the inversion of the foot, gives a hint as to the cause. It is an old theory that the disease begins in the round ligament, one which Mr. Adams still holds, but which, as far as I know, is little received. Permit me to

read in this connection a short extract from Bryant's *Surgery*, the tone of which shows how lightly he holds this view: "The question has never been very warmly discussed as to the origin or not of the disease of the knee in the crucial ligaments, or of disease of the shoulder in the long tendon of the biceps. And yet we find good men and true gravely discussing the origin of hip disease in the ligamentum teres. My late respected teacher, Mr. Aston Key, laid great stress upon this point, and believed that it was from that ligament and its attachments that disease of the hip-joint generally proceeded." Farther on Mr. Bryant gives means of distinguishing disease of the synovial membrane from that of the bone, but says nothing of the diagnosis of disease of any limited part of the joint. It will be noticed that the expression of authors, "beginning in the round ligament," is very vague, as we are in doubt whether or not rupture of the ligament is meant by it. Sayre is more explicit; he writes as follows:—

"Any violent straining of the ligamentum teres, such as may be caused by forcibly stretching the legs apart" (this accident, be it mentioned in parenthesis, is, I believe, impossible), "or by other violent exercise which gives motion to the extreme limits, may partially or completely separate it from any of its attachments to the bones. It is most likely, however, to be separated from its attachments to the head of the femur. When such an accident occurs, the vessels which supply the head of the femur are destroyed, and necrosis follows as the result of interference with its nutrition. Secondary changes soon occur in the cartilages and the synovial membrane, and the case goes on, if not relieved, to the development of the disease in its worst form."

If this picture is not overdrawn (as I am inclined to think it is, for why then do we not have necrosis after dislocation of the thigh, in which case this ligament is always ruptured?), this accident certainly did not occur to my patient. Nevertheless, I believe that his trouble began in or about the round ligament. As is well known this band hardly deserves its name. It is of little strength and seems rather a support for vessels than a means of limiting motion; still there is no doubt that it can be made tense. The experiment of removing the inner wall of the socket enables us to see that it is tense when the thigh is flexed and the limb adducted and rotated outward; that is, when in the position assumed in taking a very high step. The foot may not appear directed outward, but the advancement of that side of the pelvis comes to the same thing. This is the position in which the strong anterior part of the capsule is relaxed, and the limb least supported. There is a certain variation in different persons, in some the ligament being tolerably tense in simple flexion, but usually one or both the elements of adduction and outward rotation are necessary. The motion of the velocipede certainly involves flexion and perhaps rotation outward. For want of a more probable cause, the health of the family being remembered, and owing to the fact that after this amusement the patient experienced inconvenience, I am inclined to think that a strain of this ligament followed by inflammation in it or around it was the origin of the trouble. A slight inflammation probably persisted in the soft parts in the fossa, at the lowest part of the joint. This is perfectly consistent with two striking points: first, the objection to eversion, and second, to the fact that so violent an

impulse as a leap on to the feet occasioned no pain. As to the eversion without flexion being painful, it might be objected that this does not make the ligament tense, but it is to be remembered that under the supposed circumstances the ligament would be thickened and probably shortened so that it would be sensitive to less strain than otherwise. A chronic and slowly increasing inflammation must have been present in the lower part of the socket for a considerable time. When treatment was begun the inflammation spread through the joint, owing to the leap from the sofa, the examinations, and the jolting which the patient suffered in a rough ride incidental to moving. This was followed by a certain effusion in the joint, which under treatment was reabsorbed. The peculiarity mentioned about lacing the boot points this way, for the position of crossing the leg is one that would make the ligament tolerably tense. The history of the case strikes me as a peculiar one, and this explanation as the most plausible. Had there been either general synovitis or osteitis, it is not conceivable that the patient should have been willing to leap as he did or that he could have done so without pain.

I now bring up another point, solely in the hope of receiving instruction. It is as to the amount of motion that should be allowed to the knee, and the best splint in cases requiring one. With Sayre's short splint the motion of this joint is entirely unimpeded, but the conditions are not the same as when the long splint is used. In the former case there is but one joint, the hip, between the two points to which the splint is fixed; in the latter there are two, the hip and the knee, which render the mechanics more complicated. Let me also mention in passing that however valuable the short splint may be in the skilled hands of its inventor, it is of but little use with others, and that crutches or at least a cane are necessary to supplement it. Using Davis's splint even, with the knee free, in this case I got much better support than with the short splint, but my experience with other splints, and indeed in this case, is decidedly in favor of confining the knee. It is true no doubt, that a healthy joint is best in motion, but the difference in the degree of support obtained is so great that I believe the sacrifice is worth making. If the knee is left free, the amount of motion in the hip is often more than is desirable. Moreover it is much more difficult to bring the weight of the body upon the splint when the knee moves away from it than when the two are kept together.

DR. JEFFRIES asked if rotation of the limb outwards, making tense the muscles of the joint, was the probable cause of the pain.

DR. DWIGHT thought that moderate rotation outwards did not cause more pain than rotation in any other direction. He was more inclined to refer the pain to the stretching of the round ligament. At first, after the accident, there was no pain whatever; the patient could jump about without experiencing any discomfort, and it was only from the fact of his walking with his foot directed outwards that a consultation was held.

DR. C. P. PUTNAM called attention to the fact that in Dr. Taylor's splint the foot does not rest upon the cross-piece which touches the ground, but that the weight of the leg is borne by the perineal strap.

In reply to Dr. Fifield, regarding the length of the limb, DR. DWIGHT said there was no shortening, but on the contrary a slight lengthening.

*Refracture of the Femur.* — DR. FIFIELD reported the case of a child that was brought to the City Hospital with a fracture of the femur. She was treated after a method highly recommended by Bryant, namely, by having the limb held in an upright position at a right angle with the body by means of a pulley from the ceiling, and by the application of coaptation splints. After four weeks' treatment, the splints were removed, and the thigh was found to be badly bowed outwards, and shortening of an inch and a half had taken place. The child, two weeks later, was etherized and the limb rebroken and treated after the usual method with extension. In three weeks' time union had taken place without deformity and with only a shortening of from one fourth to one half of an inch.

Dr. Fifield reported also the case of a man who suffered a fracture of the upper third of the thigh, by falling from the mast-head of a vessel off the coast of Africa on the 6th of August last. Splints were applied, as best they could, while the patient was lying in the cabin. He was brought to this country and came under Dr. Fifield's care at the City Hospital two weeks ago. At the time of entrance there was shortening of two and one fourth inches, the foot was strongly everted, and a very large callus existed about the point of fracture. The patient was etherized, and the limb refractured much more easily than was anticipated and was brought down so that there was only half an inch shortening. Extension was applied, and at the time of reporting, two weeks after the refracture, the limb was perfectly straight with no eversion or inversion. Dr. Fifield added that Holmes says he has seen a successful refracture at the end of thirteen months. The union in vicious fracture is not solid, and refracture can be made much more easily than one would anticipate.

*Bow-Legs.* — DR. BROWN asked Dr. Fifield if he had ever treated bow-legs in children after this method, and if he would expect any relief from continued pressure in such cases. Dr. Brown said that he had under his care at the Children's Hospital a child with marked distortion of the tibia and fibula treated by continued pressure applied by means of an instrument which he had had constructed for that purpose. The distortion was rapidly disappearing.

DR. FIFIELD answered in regard to the treatment of bow-legs by fracture, that he had seen a number of such cases well treated at the Children's Hospital in Great Ormond Street, London, but he thought that in the early stage continued pressure would serve much better than fracture, and they would be found to bear a great amount of force. Dr. Fifield added that it was well to bear in mind that such cases will get well spontaneously. In green-stick fracture he always made the fracture complete.

*Cellulitis as a Cause of Uterine Version.* — DR. BAKER referred to two cases of left lateral version of the uterus as a result of cellulitis of the left broad ligament. The history of both patients was quite similar in that they were single, about twenty-five years of age, natives of Ireland, and the attack of cellulitis in each case had occurred several years previously and was subacute in character. The symptoms complained of were constant dragging and aching sensations in the left groin, increased very much on any exertion, and great dysmenorrhœa. The treatment consisted in hot vaginal douches, local

application of tincture of iodine (seventy-five grains to alcohol one ounce) per vaginam, and conjoined external and internal manipulations of the bands of adhesion to produce a relaxation so as to allow the uterus to regain its normal position. In one case the treatment brought on a fresh attack of cellulitis each time that it was attempted. The other case recovered after two months.

The interesting feature in these two cases was that the pain should have been on the same side as the adhesions, and that the same treatment should have produced such opposite results.

DR. HILDRETH stated that in one case he had attempted to replace a retroflexed uterus of eighteen years' standing following pelvic cellulitis, and, after a short trial in much the same way as described by Dr. Baker, the patient was obliged to keep her bed for a couple of weeks: after a year, the same treatment was again tried, and she was forced to keep her bed nearly four weeks. He had asked some of his *confrères* what their experience had been in such cases, and found that they had met with similar results. He had seen one case of pelvic cellulitis treated by another practitioner by local applications of tincture of iodine per vaginam, and the patient thought she had been greatly benefited.

Dr. Hildreth asked if it was possible to find out beforehand what cases could be treated in this manner without bringing on a fresh attack of cellulitis.

DR. BAKER said he knew of no way except by making the trial.

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#### CORMACK'S CLINICAL STUDIES.<sup>1</sup>

THIS work is a collection of papers on medical subjects which have appeared at various times, either as monographs or published in journals. Many of them will be found to be of value, and we take pleasure in recommending the volumes to the attention of practitioners. The most elaborate of the essays is an account of the relapsing fever, which prevailed in Edinburgh in 1843 and 1844. The author studied this epidemic with the most painstaking assiduity. "The clinical reports—sometimes condensed for publication—were invariably committed to writing, *in extenso*, at the bedside; and the accounts of the post-mortem examinations were all written whilst the appearances were being actually observed." Although so long a time has elapsed since this description was written, but little has since been added to our knowledge of the disease, and it is one of the best descriptions of this singular malady which we possess. The observations on the treatment are eminently judicious, and show that the author was considerably in advance of the therapeutics of his time.

The second paper is composed of three essays on the subject of cholera, which the author considers to be intimately related to malarial fever, the most obvious symptoms being caused by the inspissated state of the blood. In the treatment we are "to bear in mind that cholera is a fever which has its term,

<sup>1</sup> *Clinical Studies, Illustrated by Cases observed in Hospital and Private Practice.* By SIR JOHN ROSS CORMACK, K. B., F. R. S. E., etc. In two volumes. Small 8vo, pp. 548 and 579. Philadelphia: Lindsay and Blakiston. 1876.

and that the serous purging is an exhausting haemorrhage, doubly dangerous from causing collapse, and leaving the residual blood in an unavailable condition." He is in favor of gratifying the urgent thirst of the patient by allowing him to drink freely of water.

Several papers in the second volume relate to the subject of the entrance of air into the veins as a cause of death, whether occurring during surgical operations or during parturition. Two essays on *Reflex Convulsions of Infancy* will be read with interest, one of them being illustrated by a remarkable case, which appeared in the journals at the time, of a child who was restored from apparent death by the hypodermic injection of morphia. A case in which death from inhalation of chloroform was averted by inverting the body of the patient, the heels being held uppermost and the head downwards, will be found interesting by all who still employ that dangerous agent.

The most valuable article in the second volume, if not in the whole book, is composed of several papers on the subject of diphtheria, and is the most complete description of the disease which we have met with. Sir John Cormack believes in the identity of croup and diphtheria; in other words, he considers diphtheria a disease and croup a symptom. He says, "I doubt whether a false membrane is ever formed on the mucous surface of the larynx and trachea in 'simple croup,' or in *any affection which is not diphtheria*. I have never seen an inflammatory false membrane in these situations, though I have long been diligently inquiring after them." In this we believe the author is in accord with the majority of eminent authorities in Europe, if not in this country. The treatment advised by the author commends itself as rational. It is tonic and supporting; "in the treatment of diphtheria there is nothing approaching alimentation in importance." We are glad to quote his opinion that emetics are seldom of much use, though it is sometimes proper to employ them; and we rejoice that he condemns the application of caustics to the throat, though soothing and solvent remedies are recommended locally. The question of tracheotomy is briefly discussed, and the operation is advised in desperate cases. An admirable account of paralysis consecutive to diphtheria, and its treatment, concludes the subject.

Several other interesting papers on various subjects are contained in these volumes, but we have sufficiently indicated the scope of the work, and, we trust, conveyed some idea of our high opinion of its excellence.

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#### BENNET ON NUTRITION IN HEALTH AND DISEASE.<sup>1</sup>

THIS is a very clear and instructive book, useful to those who, having no scientific acquaintance with physiology and pathology, desire to understand, in a general way, the laws of nutrition. Such readers may be impressed with the necessity of living conformably to those laws, and instructed how to retrace their steps when they have not wandered too far in the paths of error. The

<sup>1</sup> *Nutrition in Health and Disease: A Contribution to Hygiene and to Clinical Medicine.* By JAMES HENRY BENNET, M. D. 8vo, pp. 248. Philadelphia: Lindsay and Blakiston. 1876.

author conceives that in a large number of cases derangements of the functions of digestion are manifested by urinary deposits which are visible without the aid of the microscope, and which will serve as a warning to the patient and an indication of the course he should pursue. We fear the effect of thus calling the attention of the dyspeptic to the state of his urine will do more harm than good. Most sufferers from that disease are more or less inclined to hypochondriasis, and it is needless to suggest to them what they are usually only too likely to do of their own accord. Every physician has had occasion to dread such patients who are never tired of speculating on the causes and dangers of the common urinary appearances. But the rules for diet, stimulants, exercise, sleep, relaxation, etc., which Dr. Bennet recommends are judicious, and cannot fail to do good if faithfully carried out by the patient.

There are two short appendixes to the book. One treats of the nutrition of plants, and of the influence of heat in accelerating vegetation. The other attempts a solution of the question, "Why do successful medical men often die prematurely?" In Dr. Bennet's opinion the cause is to be found in the over-work which is inevitable to physicians in large practice, and which usually reaches its greatest amount at a time of life when both body and mind begin to require rest rather than increase of labor. The lesson this teaches is obvious, but the necessity for making some provision for the future, which cannot in most cases be done at an earlier period, too often prevents its application.

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#### WEAK POINTS OF THE CORONER'S INQUEST.

SOME of the defects in the present law which has reference to the system of conducting coroners' investigations may be illustrated by a case which occurred recently in this city. An elderly gentleman while on his way to church on a Sunday afternoon was instantly killed by the collision of a passing horse-car with a runaway horse and sleigh. Two men were in the sleigh, one of whom was found to be intoxicated. The policeman testified that the other, the driver, was sober. The men were arrested to await the result of the coroner's inquest. Previous to the collision the horse had been brought to a walk on at least two occasions after starting to run, giving the police an opportunity to interfere had they seen fit. The men were allowed, however, to pursue their way. The police became, therefore, in a measure, responsible for the accident in case their duty in this instance had been neglected. Were the men drunk and culpably careless, or did they use every endeavor to restrain an excited animal? was the question for the coroner's jury to solve. It will be seen that they were obliged to rely for information on this point chiefly on the testimony of those witnesses who could be most readily procured, namely, the police, who were naturally interested to shield themselves by testifying in favor of the men. On the other hand, spectators of the various stages of the runaway, who had no personal interest in the result, would not be likely to find their way spontaneously to such a tribunal. We have no fault to find with the manner in which the investigation was conducted in this particular instance. It is evident, however, that in any case involving the safety of human life in the streets

of a city, the investigation should be of the most searching character. This it can hardly be possible to effect with the imperfect machinery of the law as it now exists. The presence of a prosecuting officer for the government, and we might add also of counsel for the defense, would give a weight and completeness to the character of the proceedings which would go far to establish the confidence of the public in coroners' inquests. We might cite more than one example of the value of such officers. In the case in question the men were absolved from all blame; we doubt if this verdict will have much weight with the public one way or the other. Indeed, so greatly have inquests waned in popular estimation that, were we not accustomed to the present state of affairs, it would be startling to realize how little confidence is placed in the decisions of a body whose deliberations most deeply concern the welfare of society.

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#### PENALTIES OF DUELING.

THE action of the grand jury in the case of Dr. Phelps, of New York, who attended the recent duel as the surgeon of Mr. Bennett, may suggest to many of our readers the propriety of consulting the laws of their respective States in this matter. In Maine the presence of a person at a duel as a surgeon, though no homicide ensues, is punishable by imprisonment for not more than twenty years, or by fine not exceeding one thousand dollars, and by ineligibility for any place of honor, profit, or trust for twenty years after conviction. The engagement to act as a surgeon at a duel renders the person liable to imprisonment for not less than one year, and to be incapable, as in the preceding section, for five years. In Vermont the presence of any person by previous engagement or appointment as a surgeon on the occurrence of a duel, the result of which is fatal to either party, is liable to imprisonment for not less than five years, or to a fine not exceeding one thousand dollars, and to be forever incapable of holding any place of honor, profit, or trust under the constitution and laws of the State. In Massachusetts the surgeon is liable to imprisonment in the state-prison for a term not exceeding five years, or in jail not exceeding three years, and to a fine not exceeding one thousand dollars. The penalty in Rhode Island is also a heavy one. We would refer our readers for information on this subject to the columns of the New England Medical Register.

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#### MEDICAL NOTES.

— F. Kretschy reports in the *Wiener medicinische Wochenschrift* the analysis of a gas obtained from the chest of a patient in Professor Duchek's wards in Vienna. The patient was a woman, twenty-eight years old, and was in danger of suffocation. The gas aspirated from the left pleural sac was found to have 77.130 per cent. of nitrogen, 15.249 per cent. of carbonic acid, a small amount of sulphuretted hydrogen, and finally an inflammable gas which was chiefly marsh gas. A very small amount of oxygen was found, that probably came from the tube used in aspiration.

— By a recent exchange we see that of the seven hundred and forty-one students in the Strassburg University this semester, fifteen are from the United States.

— The *Allgemeine medicinische Central-Zeitung* says that according to the last census, to every ten thousand inhabitants of Berlin there appear to be 7.98 physicians, 0.66 apothecaries, 3.31 midwives; while in the whole kingdom of Prussia to a like number of inhabitants there are 7.39 physicians, 1.26 apothecaries, and 4.94 midwives.

— The memorial day of the late Professor Traube, of Berlin, was on Sunday, December 10th, when his successor, Professor Leyden, read an obituary address at twelve o'clock in the hall of the university.

— The *Journal of Physiology and Anatomy*, begun by Meckel, but better known under the authorship of Du Bois Reymond and Reichert, of Berlin, is divided into two parts, of which one will be continued as a journal of physiology under Du Bois Reymond and Ludwig, of Leipsic, the other as a journal of anatomy under Braune and His.

— The Prussian *Medical Calendar for 1877* contains an article by the versatile Virchow on the causes of death, which is, in short, a cutting rebuke on the nomenclature adopted by many physicians of Prussia. He argues that technical Latin names should be underwritten on every death certificate, and not those vague regional terms which satisfy public curiosity.

The Calendar contains methods of examining anomalies of refraction and accommodation, making use of Schweigger's new types, the advantage of which, if any exists over Snellen's types, is that all the selected letters are such as are printed above a horizontal line, as M, N, O, R, S, etc., and at the same time have no ascending portion; such letters as B, D, H, K, etc., corresponding to the last condition, and F, representing both conditions, are omitted.

— The *Army and Navy Gazette* of Great Britain announces that the unification of the military medical department is now being rapidly pushed forward. In future, instead of a surgeon being attached to a regiment, the latter will be attended by a special sanitary officer. Thus army doctors and those under their medical charge will be complete strangers, till they make each other's acquaintance in hospital. Malingering will flourish; two good features can be realized from the change, however,—the amount of paper-work will undoubtedly be less, and all army doctors must take their share in Indian and colonial service. If no European war intervenes between now and March, about sixty military medical officers will embark for foreign service.

## MASSACHUSETTS GENERAL HOSPITAL.

### SURGICAL CASES OF DR. CHARLES B. PORTER.

[REPORTED BY G. H. TILDEN, M. D.]

*Tetanus; Free Use of Chloral and Bromide; Recovery* — August 14, 1875.  
C. G., aged eleven years, entered the hospital with an injury to the right arm,

received half an hour previously. The wound, made by a carding-machine, was a superficial tear in front of the elbow-joint. A flap of skin of the size of the palm of the hand had been completely wrenched away from the inner angle of the arm, exposing the superficial muscles and nerves, one or two of the latter lying torn and bare in the wound. No vessel of any size was wounded, and the elbow-joint was uninjured. The arm was placed on an external angular splint, and the wound dressed with simple water dressing. All went well till the fifth day, when the wound and parts adjacent became swollen and inflamed. A poultice was applied. In two days the inflammation and swelling had subsided, but the wound looked dirty and was covered with tough, adherent sloughs. A dressing of "acid wash" was substituted for the poultice. The look of things now speedily improved, and in two days the wound was clean and healthy. The first sign of tetanus was noticed August 27th, thirteen days after entrance. Complaint was first made of stiffness in the jaws, pain in the back of the neck, and much difficulty in chewing and swallowing food. There was no marked febrile disturbance. A blister was applied to the inner side of the arm above the wound over the course of the nerves, and enemas of ten grains of bromide of potassium and seven grains of chloral hydrate in one ounce of water were given every three hours. The next day there was no improvement, the patient not being able to open his jaws more than an inch, and having cramp-like pains in the calves of his legs. Another blister was applied to the arm, and also to the neck over the course of the brachial plexus of nerves. The chloral and bromide were increased to fifteen grains of the former and twenty grains of the latter, given in enema as before, and the wound was dressed with a solution of chloral hydrate, ten grains to the ounce of water. For several days the condition of the boy gradually grew worse; a marked but intermittent tendency to opisthotonus soon showed itself, and his tongue was several times badly bitten by spasmodic closure of the jaws. He was given stimulants, but in the way of food could take nothing but liquids and semi-solids. The enemas of chloral and bromide were given as occasion required, sometimes oftener than once in three hours, so as to keep the boy completely under their influence, in fact almost narcotized. As long as he was thus kept the spasmodic contractions of the muscles were controlled, the patient being drowsy most of the time. Any source of irritation, however, such as the endeavor to take food or being moved or handled, was almost sure to bring on an attack of muscular contraction, more especially in the muscles of the jaws and of the back of the neck. The tendency to opisthotonus became more constant, the boy lying in bed with his back slightly arched. After the first few days he showed the erythematous blush of the skin due to the influence of the chloral, and at times his pulse became very rapid and his pupils contracted. On September 6th, ten days after the appearance of the disease, there began to be some diminution in the violence and frequency of the spasms, and some improvement in the general subjective feelings of the patient. On the next day, however, his mother, contrary to the most strongly expressed advice, insisted on taking the boy home. About a month afterward she reappeared with him. He had entirely recovered, after having had several attacks of muscular spasm since leaving the hospital.

Throughout the whole course of the disease the wound looked well, and was almost entirely healed when the boy came back.

In ten days this boy, aged eleven years, had of chloral hydrate eight hundred and five grains, and of bromide of potassium one thousand one hundred and fifty grains, being an average of eighty grains of the former and one hundred and fifteen grains of the latter every twenty-four hours.

*Carbuncle; Subjacent Abscess; Operation; Recovery.* — September 21, 1875. M. E., aged sixty-one years, was admitted to the hospital with a carbuncle the size of a small dinner plate between his shoulders. It had existed for a month, and on entrance measured six by eight inches. Suppuration had begun, as was shown by the "pepper-box" look of the surface, in which were many small vent holes discharging pus. The patient, originally a robust man, gave a history of overwork and underfeeding, and was in a very feeble state from unrelieved and excessive pain. A large carbolized poultice was applied to the carbuncle, and the patient was given extra diet, with ale and milk punch. During the next six days the condition of the patient did not improve, but on the contrary became worse. He suffered much from pain and from a persistent diarrhoea, occasionally having a severe chill. The carbuncle, however, did not seem to be spreading. He took large quantities of alcoholic stimulants and opium, and also was given ten grains of carbonate of ammonia three times daily.

September 28th. Pain and diarrhoea had reduced the patient to a very feeble state. Having been carefully etherized, deep and free incisions were made into the carbuncle, extending from edge to edge, and crossing each other in the centre at right angles. The quadrant-shaped flaps thus made were thoroughly undermined by the combined use of the knife and fingers, and the thickened and infiltrated tissues were fully exposed. Beneath the carbuncle and burrowing around under the deep fascia of the back was almost half a pint of pus which was evacuated. The haemorrhage was checked by the use of liquor ferri perchloridi, and the wound dressed with a solution of carbolic acid, one part to forty. At the close of the operation the man was seemingly in a dying state, his pulse being almost gone. He was at once given an enema of brandy, and during the day had by the mouth brandy in small quantities at short intervals. In the evening he was much improved, and the next morning said that he had passed the most comfortable night since coming to the hospital.

For two weeks after the operation, although in a great measure free from pain, his condition was unstable and fluctuating. An obstinate diarrhoea was the great drawback. The wound meanwhile did as well as could be expected under the circumstances. The sloughs all came away by October 10th, leaving a large raw surface nearly six inches in diameter and ready to granulate.

October 12th. For two days the diarrhoea had been growing worse and the patient weaker. He was now in such a wretched state that reasonable hope of his surviving the day was wanting. The medicines, opium and quinine, that he was taking were stopped. During the day he was given a pint of champagne in divided doses, and of milk punch made with brandy as much as he would take. He also had enemas of starch and opium, *pro re natâ*, and by the mouth a mixture of tincture of kino, tincture of catechu, and tincture of capsicum, equal parts, a teaspoonful every three hours. The next day, contrary

to expectation, he was stronger and had less diarrhoea. From this time, at first slowly, afterwards more rapidly, he improved without relapse, having been rescued from his desperate strait only by the native vigor of his constitution. The granulating surface on his back was dressed with charpie and myrrh; he was out of bed on November 8th, and was discharged, well, November 23d.

*Incised Wound of the Knee, with Section of the Ligamentum Patelle.*—June 23, 1876. M. G., aged thirty years, while mowing, cut his leg with a scythe, and was brought to the hospital four hours afterwards. He had received an incised wound two and a half inches long, on the front of the left leg just below the knee. The cut was transverse to the long axis of the limb, and the ligamentum patelle had been completely severed just above its insertion into the tubercle of the tibia. At the time it was impossible to ascertain whether the knee-joint was involved without an examination of the wound, inquisitive rather than necessary or advisable. The cut edges of the ligamentum patelle were brought together with three sutures of carbolized strands of Chinese silk, and one vessel was tied with a ligature of the same material. All the ends of both sutures and ligature were cut short. The wound was then washed out with an aqueous solution of carbolic acid, one part to forty, and its cutaneous edges were united with sutures of carbolized silk. The leg was placed on a ham splint, and the wound was dressed with cotton batting kept saturated with an aqueous solution of carbolic acid, one part to eighty. Ice-bags were applied to the knee. On the 27th all the sutures were removed, and by June 29th there was good and perfect union of the edges of the wound. The patient suffered but very little pain, and there was but a slight and temporary swelling in the immediate vicinity of the wound. The cotton-batting dressing and ice-bags were kept applied for one or two days longer, and from motives of prudence the man was kept in bed with a splint on until August 3d. The splint was then removed, and the function of the ligamentum patelle was unimpaired. Discharged August 7th.

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#### THE TREATMENT OF CHANCROIDS.

MESSRS. EDITORS,—Dr. Greenough's article, in your number for January 11th, suggests comment. If Dr. Greenough's experience is the average for your locality, the Boston chancre is certainly a milder affair than the affection as we see it here. In hospital practice phagedenic chancroids with extensive destruction of the prepuce are by no means uncommon; loss of the entire glans is less frequent, but cannot be considered a curiosity, and destruction of the major part of the corpora cavernosa, and even of the entire penis, I have seen on several occasions. The use of iodoform as described by Dr. Greenough has been the common practice at the Charity Hospital for several years, in some cases preceded by nitric acid, but usually not. In 1875, three hundred and seventy-six cases were under treatment, and the average period of cure was about thirty days, which certainly does not equal the brilliant results recorded by Dr. Greenough. This further leads me to believe that our average hospital chancroids are severer lesions than those met with in your city, un-

less Dr. Greenough's were mainly perambulating cases. I admit the thorough inefficiency of nitrate of silver in these cases, and do not think that nitric acid is very much better. I therefore replace them with a stronger caustic, the nitrate of zinc (vide *New Remedies*, March, 1876) or one still stronger, the actual cautery. This latter must be used at a *white* heat or not at all. Red heat will do more harm than good; it simply causes a burn, with a slowly separating slough, flabby granulations, tardy healing, and a retractile cicatrix. The results obtained by the actual cautery have been detailed elsewhere (*Arch. of Clin. Surg.*, Nov., 1876). An anæsthetic is rarely necessary, but when it is demanded I employ nitrous oxide (in private practice), usually administering it myself. The disagreeable odor of idoform may be obviated in great measure by using a saturated ethereal solution, which appears to be fully as efficient as the powder. It is also admirable as an injection in cases of subpreputial chancroid complicated with phymosis. The solution should be thoroughly protected from the light. Respectfully yours, HENRY G. PIFFARD, M.D., Surgeon to Charity Hospital, etc.

NEW YORK, June 13, 1877.

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING JANUARY 13, 1877.

	Estimated Population, July 1, 1877.	Total Mortality for the Week.	Annual Death-Rate per 1000 for the Week.	Death-Rate for the Year 1876.
New York	1,077,228	459	22.16	27.46
Philadelphia	850,856			22.24
Brooklyn	527,830	189	18.62	24.31
Chicago	420,000	173	21.40	20.41
Boston	363,940	128	18.01	23.39
Providence	103,000	34	17.16	18.34
Worcester	52,977	19	18.65	22.00
Lowell	53,678	26	25.18	22.21
Cambridge	51,572	17	17.14	20.54
Fall River	50,370	13	13.42	22.04
Lawrence	37,626	17	23.49	23.32
Lynn	33,524	10	15.51	21.37
Springfield	32,976	9	14.19	19.69
Salem	26,739	15	29.17	23.57

Normal Death-Rate, 17 per 1000.

DR. GERRY'S CASE OF INTUSSUSCEPTION.

MESSRS. EDITORS.—I notice in your reports, in to-day's *JOURNAL*, of the above very interesting and important case, that Dr. Bowditch is quoted as having said that "in his opinion the patient did well in spite of the treatment, not owing to it." As the treatment from June 29th to July 15th (including, beyond all doubt, the entire period in which the intestine would be in peril from improper treatment) was dictated by myself in consultation, and was, I am convinced, the means, humanly speaking, of saving the patient's life, I may be permitted to reply to this somewhat trenchant criticism. The patient had, before calling either Dr. Gerry or myself, taken large doses of a purgative, peculiarly stimulative, of peri-

staltic action (infusion of senna without carminatives). I found him suffering from an obstruction of the intestines, the cause of which was very obscure. A careful examination of the abdomen revealed the presence of a large solid mass in the cæcal region; there was no doubt of this at all, but the cause of this lodgment of fecal matter was not evident. At one very limited point there was tenderness, increased on pressure, but by no means very marked even then. This point corresponded with the junction of the large with the small intestine, and was the seat, also, of acerbations of an evidently spasmoid character. There was little or no tympanitic distension of the intestine. Dr. Gerry and myself, after administering a moderate hypodermic dose of morphia, which almost immediately relieved all pain and made the patient entirely comfortable, retired to consult. All probable causes of obstruction were fully discussed, including intussusception, and with the full knowledge that this might be the trouble the treatment which was faithfully pursued was agreed upon. It consisted essentially of (1) morphia, hypodermically, in sufficient doses, pro re nata, to relieve pain and control the tendency to spasmoid action of the intestinal muscular coat; (2) very large warm demulcent enemata frequently repeated. In advising these I stated the very marked benefit which I had recently obtained in an obstinately persistent and apparently almost hopeless case of obstruction at the sigmoid flexure, by filling and distending the intestine below the point of obstruction so that its outline could be felt and seen as a large pyriform tumor. (I prefer such injection to the "classically" correct inflation with air, (1) because the warmth has advantages, (2) because the distending space can be more accurately measured, and the by no means visionary danger of ruptured intestine avoided.) The chief object of these enemata was by no means expressed by the castor-oil and oil of turpentine which entered, in very small proportion, into their composition; that object was to apply pressure and a moderate distending force from below, and, if the fecal mass could be reached by them, to effect its solution and dislodgment. (3) The usual presentations to the abdominal surface. It was not till my third visit, when examination revealed the fact that the obstruction had yielded, that a few grains of blue-pill followed by a gentle cathartic were advised. Pain had then almost entirely disappeared, but one bad symptom, and the only one, of gangrene, which the case had presented, coldness of the hands, remained. On the following morning the hands had recovered their natural warmth, the surface of the abdomen and its contents apparently a normal condition, and all vomiting and pain had entirely ceased. This striking change and improvement was exactly coincident, first, and in great measure, with the movement onward of a great accumulation of fecal matter; finally and completely with its discharge, as evidenced by two *pots de chambre* filled with a thick, clay-colored fluid, evidently dissolved scybala. The relief was not coincident with replacement of the intussuscepted intestine, of course, nor with discharge of the dead and dragging mass of tissue, for that did not come away till nearly three weeks after. It is well worthy of notice how very comfortable, on the whole, the patient was, with over seventeen inches of dead *ileum* in the canal, and how regularly during all this time he had his daily dejections. I regret that the courtesy of an invitation to the meeting of the Suffolk District Medical Society was not extended to me, and that I was ignorant beforehand of the reading of Dr. Gerry's report. A few words there would have saved you and myself the trouble of this communication, which is made rather that another shall not be blamed for treatment for which I am responsible, than from any particular personal sensitiveness to *ex cathedra* criticism. Formidable as is the critic, I would most gladly meet him in a fair discussion of the treatment of intestinal obstructions, and, in the mean time, although not entirely ignorant of text-book learning on this point, assure him that my treatment of another patient presenting exactly the same symptoms as did Dr. Gerry's would be precisely what his was, on principle and not simply because he did so well.

HENRY AUSTIN MARTIN.

27 DUDLEY STREET, January 18, 1877.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The regular meeting will be held at the rooms, 36 Temple Place, on Saturday, January 27th, at seven and a half o'clock. The following papers and cases will be read:—

Dr. C. J. Blake, *Herpes Zoster Auricularis.*

Dr. J. C. Warren, *Cases of Conservative Surgery.*

Tea, etc., at nine o'clock.